

Remarks

Claims 1-24 are pending in the application. By this amendment, claims 1-24 are canceled and new claims 25-46 are added. Newly added claims 32-38, which depend from newly added claim 26, include subject matter corresponding to that of canceled claims 1-7. Newly added claims 39-46, which depend from newly added claim 26, include subject matter corresponding to that of canceled claims 14-21. It is noted that the newly added claims 25-46 are similar to those of corresponding granted UK Patent No. GB2423846.

Claim 7 is objected to for an informality.

Claims 1-3 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Nagakawa (Translation of JP, 200-126459. Hereinafter Nagakawa).

Claims 4, 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Tremblay et al. (US 6,275,213, hereinafter Tremblay).

Claims 6, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Fukui et al. (WO, 02-073385, hereinafter Fukui).

Claims 14 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai (JP, 2003-251277, hereinafter Hirai).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Buttafoco (US 7,079,995, hereinafter Buttafoco).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Matsuda (JP, 2000-148393, hereinafter Matsuda).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Shinoda (JP, 11-150794, hereinafter Shinoda).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Chowa (JP, 09-221753, hereinafter Chowa).

Claims 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Each of the various rejections and objections are overcome by amendments that are made to the specification, drawing, and/or claims, as well as, or in the alternative, by various arguments that are presented.

Any amendments to any claim for reasons other than as expressly recited herein as being for the purpose of distinguishing such claim from known prior art are not being made with an intent to change in any way the literal scope of such claims or the range of equivalents for such claims. They are being made simply to present language that is better in conformance with the form requirements of Title 35 of the United States Code or is simply clearer and easier to understand than the originally presented language. Any amendments to any claim expressly made in order to distinguish such claim from known prior art are being made only with an intent to change the literal scope of such claim in the most minimal way, i.e., just to avoid the prior art in a way that leaves the claim novel and not obvious in view of the cited prior art, and no equivalent of any subject matter remaining in the claim is intended to be surrendered.

Also, because a dependent claim inherently includes the recitations of the claim or chain of claims from which it depends, it is submitted that the scope and content of any dependent claims that have been herein rewritten in independent form is exactly the same as the scope and content of those claims prior to having been rewritten in independent form. That is, although by convention such rewritten claims are labeled herein as having been "amended," it is submitted that only the format, and not the content, of these claims has been changed. This is true whether a dependent claim has been rewritten to expressly include the limitations of those claims on which it formerly depended or whether an independent claim has been rewriting to include the limitations of claims that previously depended from it. Thus, by such rewriting no equivalent of any subject matter of the original dependent claim is intended to be surrendered. If the Examiner is of a different view, he is respectfully requested to so indicate.

Claim Objection

Claim 7 is objected to because the phrase “any one of” appears in claim 7 on line 2. In view of the cancellation of claim 7, it is respectfully submitted that the objection is now moot. However, it is noted that the applicant has avoided the use of this phrase in newly added claim 38, which corresponds to now-canceled claim 7.

Rejection Under 35 U.S.C. §102

Claims 1-3 and 8-10 are rejected under 35 U.S.C. §102(b) as being anticipated by Nagakawa. However, in view of the cancellation of these claims, it is respectfully submitted that the rejection is now moot.

The Examiner is respectfully requested to withdraw the rejection.

Rejection Under 35 U.S.C. §103

Claims 4, 5, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Tremblay et al. (US 6,275,213, hereinafter Tremblay).

Claims 6, 7 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Fukui et al. (WO, 02-073385, hereinafter Fukui).

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Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Shinoda (JP, 11-150794, hereinafter Shinoda).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagakawa in view of Hirai and Chowa (JP, 09-221753, hereinafter Chowa).

However, in view of the cancellation of these claims, it is respectfully submitted that the rejections are now moot.

The Examiner is respectfully requested to withdraw the rejection.

Discussion of Newly Added Claims

Generally speaking, the relationship between a physical quantity or force to be applied to a human body and the corresponding sensory quantity to be perceived by the human body is not linear. This is referred to as the “haptic sensory characteristic” of a human body. The haptic sensory characteristic of a human body represents for example, the relationship between vibration applied to a human body and vibration sensation perceived by a human body, the relationship between torque applied to a human body and torque sensation perceived by a human body, and the relationship between force applied to a human body and force sensation perceived by a human body. Examples of the haptic sensory characteristic are described in [0038]-[0052] on pages 15-21, and Figs. 2-7, 8 of the specification.

The present invention utilizes the relationship between a physical quantity to be applied to a human body and a sensory quantity to be perceived by a human body. The present invention utilizes, illustratively, a plurality of operation points on a graph representing the relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body.

Applicants note that a streaming video presentation of an embodiment of the present invention may be found at the following web site:
<http://movie.diginfo.tv/2007/07/09/07-0082-gm.php>

With respect to method claim 25, the cited references, either alone or in combination, fail to teach or suggest at least the following element:

“wherein said controlling comprises controlling said physical quantity based on a haptic sensory characteristic of a human body, wherein said haptic sensory characteristic represents a relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body.”

With respect to system claim 26, the cited references, either alone or in combination, fail to teach or suggest at least the following element:

“wherein said control unit is operable to control said physical quantity based on a haptic sensory characteristic of a human body, wherein said haptic

sensory characteristic represents a relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body.”

Thus, claims 25 and 26 teach, respectively, a method and system that utilize a haptic sensory characteristic of a human to related physical quantity (such as a vibration, a torque or a force) to a sensor quantity (such as a respective vibration sensation, torque sensation and force sensation), thereby to allow a control unit to appropriately control the physical quantity to produce the desired center quantity to be sensed by a human.

In contrast to the above-quoted portions of claims 25 and 26, the cited references fail to disclose or suggest the use of a haptic sensory characteristic to determine an appropriate physical quantity for producing a desired sensor quantity to be sensed by human. The cited references, at most, present a physical stimulus to a user in which control of the physical stimulus is determined by mechanisms having nothing to do with the haptic sensory characteristic of the human body.

Therefore, claims 25 and 26 are patentable over the cited references.

With respect to new dependent claims 27-42:

As recited in new claim 28, the present invention utilizes a nonlinearity of the relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body, as shown in Figs. 2 and 3.

As recited in new claim 29, the present invention utilizes a hysteresis of the relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body, as shown in Fig. 4.

As recited in new claim 30, the present invention utilizes a masking effect of the relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body, as shown in Figs. 5-7.

As recited in new claim 31, the present invention utilizes a phenomenon that the relationship between said physical quantity to be applied to a human body and said sensory quantity to be perceived by a human body is changed to according to at least one of muscle tensile state, physical state, physiological state and psychological state, as shown in Fig. 8.

As previously noted, new claims 32-38 include subject matter corresponding to that of canceled claims 1-7, and new claims 39-46 include subject matter corresponding to that of canceled claims 14-21.

Since dependent claims 27-42 depend either directly or indirectly from claim 26 and recite additional limitations therefrom, it is respectfully submitted that dependent claims 27-42 are patentable for at least the reasons discussed above with respect to claims 25 and 26.

Allowable Subject Matter

Claims 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants thank the Examiner for indicating allowability with respect to claims 15 and 16. Applicants note that the subject matter of canceled claims 2, 15 and 16 may be found in, respectively, new claims 33, 40 and 41. Applicants submit that claim 33 is patentable for at least the reasons discussed above with respect to independent claim 26. Thus, claims 40 and 41 are additionally patentable for the reasons discussed above with respect to independent claim 26.

Conclusion

It is respectfully submitted that the Office Action's rejections have been overcome and that this application is now in condition for allowance. Reconsideration and allowance are, therefore, respectfully solicited.

If, however, the Examiner still believes that there are unresolved issues, the Examiner is invited to call Eamon Wall at (732) 842-8110 x120 so that arrangements may be made to discuss and resolve any such issues.

Respectfully submitted,

Dated: 9/8/09



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